ABSTRACT

Background: Occupational therapists use a range of strategies to influence the relationship between person, environment and occupation and facilitate people's participation and inclusion in society. Technology is a fundamental environmental factor capable of enabling inclusion, and occupational therapy models articulate a role for assistive technology (AT) devices and services, but there is a gap between theory, research and practice. The context of AT provision in Australia presents systemic barriers that prevent optimal application of AT devices and services for societal health promotion and in individualised solutions.

Methods*:* The Integrating Theory, Evidence and Action method (ITEA) was used to answer the question "How can occupational therapy support AT provision to enable older people and people with disability?" A wide range of sources were systematically analysed to explore the complexities of AT provision in Australia.

Results: The International Classification of Functioning, Disability and Health (ICF) and IMPACT^2 model are used as frameworks to reconstruct evidence into statements that summarise the theory, process, and outcomes of AT provision. Analysis of the influence of the global disability rights and local policies and AT provision systems is used to highlight important aspects for occupational therapists to consider in research and practice. Pragmatic recommendations are provided to enable practitioners to translate theory and evidence into action.

Conclusion: AT provision can be improved by focusing on evidence for and congruence between theory, process and outcomes, rather than isolated interventions. Occupational therapists should consider the influence of contextual factors on practice, and work with consumers to improve access and equity in AT provision systems.

Key words**:** assistive technology, occupational therapy, disability policy, outcomes measurement, ICF

INTRODUCTION

Technology represents a fundamental environmental factor capable of enabling occupation. Assistive technology (AT) is a term that is used internationally in legislation, policy and research literature to describe devices used by people with disability, but also refers to a range of services or practices that support device use (Borg, Larsson, & Östergren, 2011). In Australia, the term 'aids and equipment' is often used synonymously with assistive technology (Pearson, O'Brien, Hill, & Moore, 2013), but some authors use the term 'Assistive Technology Devices (ATDs)' to differentiate the devices and services (Elsaesser & Bauer, 2012). ATDs comprise a continuum from mass produced devices designed for and sold to the general population, to modified, commercially available devices and custom-made devices for people with impairment. Integrating definitions from the International Organisation for Standardisation, which publishes the ISO 9999:2011 'Assistive products for persons with disability – Classification and terminology' (International Organisation for Standardisation, 2011) and the World Health Organisation's (WHO) International Classification of Functioning, Disability and Health (ICF), which classifies assistive products and technology within the Environmental Factors component (World Health Organisation, 2001), we define ATDs as mainstream products made generally available, and those that are specially designed or produced, where their purpose is to support the functioning and participation of an individual with impairment in any or all life situations.

The introduction of ATDs is one of several interventions used by occupational therapists to optimise functioning for individuals and reduce negative impacts of disability, where disability is regarded as occurring in transaction between the individual and their environment, rather than resulting from impairment or environmental factors alone (World Health Organisation, 2001). AT can bridge the capability gap between environmental demands and an individual's capacity, where such a gap results in participation restrictions (Lahm & Sizemore, 2002). AT is effective in increasing autonomy, independence, health-related quality of life and productivity of individuals and their circles of support and, at a societal level, decreasing care and societal cost burdens by limiting secondary complications and residential care admission (Jutai, Fuhrer, Demers, Scherer, & DeRuyter, 2005). Such positive outcomes however, depend upon the availability of AT services (also known as 'soft technologies'), which we define as any service that directly assists an individual in the selection, acquisition, or use of ATDS. AT services include information and advice, ATD set-up and trial, and tailoring of the fit between the individual, ATD(s), environments and occupations of use (Waldron & Layton, 2008). In Australia, occupational therapy is the health profession with expertise across the greatest number of ATD categories. This means occupational therapists are primary prescribers within funding schemes, and key providers of AT services.

There is a dissonance between occupational therapy's theoretical understanding of AT and advocated approaches to AT provision, and the research, policies and practices related to AT interventions. Although espousing a person-centred approach, occupational therapy research tends to retain a focus on clinical approaches (Dahlin Ivanoff, Iwarsson, & Sonn, 2006). In practice, ATDs and services are delivered to consumers in different settings and by organisations that vary in their purpose or mission, priority functional areas (e.g. sensory aids, driving, robotics), target populations (e.g. age or diagnostic groups), internal operations (e.g. staffing, outreach), and funding (e.g. grants, third-party, fee-for-service). AT provision is often constrained by inefficient allocation of financial and clinical resources, and practices that are not consistently guided by theory or evidence (Lenker et al., 2010). Varying motivations and incentives within policy contexts restrict the opportunities for practitioners to deliver optimal AT services (de Jonge, Layton, Vicary, & Steel, 2015). So, how can occupational therapy support AT provision to enable older people and people with disability?

This study provides a broad map of the existing evidence and concepts that can be used by occupational therapists to advance research, policy and practice in AT provision. By systematically analysing a range of sources, it aims to conceptualise AT in context, clarify uncertainties about the measurement of outcomes from AT provision, and highlight inconsistencies in AT provision systems and practices. The objective is to identify approaches to AT provision that are supported by evidence, highlight important aspects for occupational therapists to consider in AT research and practice, and reflect on the influence of the macro context of disability rights and global action on local AT provision systems. The reconstructed evidence in this paper provides practical advice for understanding and improving individual and societal outcomes from AT provision and use. The paper is organised into several sections, beginning with an outline of the method used and stages of analysis. It then uses the ICF and the IMPACT^2 model (Smith, 2005) as frameworks within which the source materials are organised to explain the theory, process, and outcomes of AT provision. Contemporary approaches to AT provision, along with the context of their development and systemic barriers to their optimal application are discussed. The reconstructed knowledge is translated into recommendations for occupational therapists to pursue AT research, policy and practice, that is theory and process-driven and evidence-based.

METHODS

A qualitative review of AT provision was conducted using the Integrating Theory, Evidence and Action (ITEA) method (Hitch, Pepin, & Stagnitti, 2014). The ITEA method provides a systematic and rigorous process that seeks to include knowledge of a topic from diverse sources of evidence (Hitch et al., 2014). It enables critical analysis of the definitions and ideas about AT that are used to build theory, and mapping of the contemporary landscape of AT provision in Australia. Step 1 of the ITEA method articulates the research question, in this case "How can occupational therapy support AT provision to enable older people and people with disability?"

Two frameworks were identified for step 2 of the ITEA method. Firstly, the IMPACT^2 model (Figure 1) is used to describe key intervention approaches for the enablement of older people and people with disability within a practice context (Smith, 2005). The IMPACT^2 facilitates the organisation of various sources of knowledge about AT provision that are relevant, but not limited to occupational therapists. It describes the theoretical relationship between ATDs and services and other intervention approaches, and delineates key variables that contribute to outcomes of AT provision. Secondly, the ICF (World Health Organisation, 2001) provides a taxonomy of activity and participation domains, and a language with which to describe the impacts and outcomes of AT. It captures various dimensions of the environment and is used to augment the IMPACT^2 construct of *context*, expanding it to consider societal and global elements.

Step 3 of the ITEA method entails identification of sources. This paper considers the macro and micro context of AT provision in which occupational therapists work, drawing on a wealth of data sources (e.g. peer-reviewed research, policy material, reports and reviews from peak bodies and consumer groups). The authors conducted an environmental scan within the parameters of the sectors in which AT is provided including disability, health, aged care and education. A search of Medical Subject Headings (MeSH) in Medline ("Self Care" AND "Self-Help Devices") as well as free text searches on a number of search engines and databases using terms related to AT provision (e.g. assistive technology, aids and equipment, assistive device, disability, rehabilitation, occupational therapy) were conducted, including only English-language materials. Primary sources include government websites, AT policy documents, contributions from AT consumers and professional organisations, as well as media and consultation reports. Ideas in this paper were also significantly informed by the authors' collaboration as members of the peak body for AT in Australia, the Australian Rehabilitation and Assistive Technology Association (ARATA). ARATA is a forum for information sharing and liaison between people who are involved with the use, prescription, customisation, supply and ongoing support of AT, and is therefore a rich source of practice knowledge and lived experience from its membership of AT users and providers. While much of ARATA's work sits within the grey literature and online, key publications provide a multi-stakeholder analysis of AT provision systems and outcomes in Australia (www.arata.org.au/conferences/library/).

In steps 4 and 5 of the ITEA method the results of the environmental scan and literature review were deconstructed, analysed and reconstructed into prose to summarise what is currently known about AT provision (Hitch et al., 2014). Finally, in ITEA steps 6 (reconstruction) and 7 (transfer and utilisation), the reconstructed evidence was sorted and mapped to the stages and elements of the IMPACT^2 model (Figure 1) to address the research question by illustrating OT support in AT provision and identifying opportunities for knowledge translation and use.

RESULTS

The IMPACT^2 model functions as a conceptual framework that captures the definition of AT as devices and services used by individuals performing activities, and acknowledges the personal and contextual factors that influence actions and outcomes from AT provision (Jutai et al., 2005). It also functions as a process framework, illustrating AT provision as a series of stages occurring over time, and differentiating six modes of intervention for enablement (Smith, 2005). The dollar signs indicate the stages where costs, including collective investment, should be considered. Evidence statements and implications for occupational therapists are presented and discussed below against each stage of the IMPACT^2.

Context

Global Context

Recent global discourse on AT has been dominated by two key issues: disability rights approaches to AT provision and equity of access. The United Nations' Convention on the Rights of Persons with Disabilities (CRPD) was adopted because of consistent failures to afford people with disability their basic rights including accessing information and health care, moving around freely, participating in education and work, and making one's own decisions (United Nations, 2006). Since the 1970's, disability rights movements across the world have questioned the medicalisation of 'special' or assistive technology that results in 'professionalization' of knowledge. This can be seen in Australia's common use of the term 'prescription' to describe the recommendations of occupational therapists, and the positioning of professionals as authorisation agents for funding of ATDs. Most Australians accessing government-funded AT wait between three and six months for initial assessments for complex AT. People living in rural or remote areas or requiring complex solutions such as customised wheelchairs may wait for one or two years before acquiring ATDs (Pearson et al., 2013). It is anticipated that active monitoring of the CRPD may decrease the gap between mandated requirements, policy and practice (Elsaesser & Bauer, 2012). Occupational therapists can use the CRPD as a participant empowerment tool, enabling consumers to reflect on whether their AT solution realises their human rights to accessibility (Article 9); living independently and being included in the community (Article 19); personal mobility; (Article 20); freedom of expression and opinion, and access to information (Article 21); education (Article 24) and health (Article 25) (United Nations, 2006).

Secondly, the significant disparity of access to AT has led to the WHO's current initiative to formulate a Model List of Priority Assistive Products (APL) as part of its Global Cooperation on Assistive Technology (GATE) program (World Health Organisation, 2015). The 2010 World Report on Disability suggests that people experience disability largely as a result of a lack of access to support services and other environmental barriers (World Health Organisation & World Bank, 2011). There is now international recognition of the importance of access to AT devices and services, along with access to healthcare services and income support (United Nations, 2006). Occupational justice approaches are congruent with this shift from charitable and rehabilitative discourses (Pollard, Sakellariou, & Kronenberg, 2008). This implies that occupational therapists can and should utilise an occupational justice lens in arguing for access to AT.

Societal Context

From a societal perspective, AT is a key intervention across the lifespan, across diagnostic groups, and across occupational domains, as illustrated by the ICF's activity and participation chapters (World Health Organisation, 2001). The unprecedented support for the CRPD represents the cultural and ideological shift in thinking about disability rights. Australia is experiencing major policy reform across many public sectors that support an ageing and growing population. The bulk of Australia's investment in AT is from

private or non-government sources, with a total annual AT expenditure in Australia estimated to be between $3.5 and $4.5 billion in 2009-2010 (Pearson et al., 2013). Government expenditure represents only 17% of this total, but supports approximately 927,000 Australians (approximately 4% of the total population) from over 90 programs receiving government funding (Pearson et al., 2013). Once fully implemented, Australia's new National Disability Insurance Scheme (www.ndis.gov.au) will provide AT as one several cost-effective 'reasonable and necessary' supports in order to deliver social and economic outcomes to around 450,000 eligible Australians. The NDIS will only cover a subset of consumers requiring AT, and the full extent of under-met and unmet need for AT in Australia is unknown.

The institutional dimension of the environment is best defined in the environmental factors component of the ICF: specifically, Chapter 5 Services, Systems and Policies. Table 1 provides examples to map out public policy on the provision of AT in Australia, and illustrate the influence of institutional factors (at a national level) on access to ATDs and services, and the presence (or absence) of occupational therapists in policy and practice.

Because of its use across all life domains, AT provision tends to be divided amongst various tiers and sectors of government (Layton, Wilson, Colgan, Moodie, & Carter, 2010). Table 1 represents only a selection of the multiple government funding schemes described in the introduction and doesn't for example include education or welfare sectors, yet illustrates the complexity and fragmentation of the sector. Table 1 also demonstrates how resources and priorities of institutions contribute to inconsistences in AT provision practices, impacting on consumers' capacities to integrate AT into their lives (Ripat & Booth, 2005; Sund, Iwarsson, Andersen, & Brandt, 2013). AT users are highly critical of the inequity resulting from differences in AT provision models, for example the differential experience of adults with acquired disability compared with those living with disability since birth (National People with Disabilities and Carers Council, 2009; Ripat & Booth, 2005). A societal lens allows occupational therapists and other AT practitioners to examine the capacity of public policy to secure rights and promote inclusion across all domains of participation. Occupational therapists should use Australia's National Disability Strategy to highlight systemic inequities and lobby for AT provision where it has potential to fulfil the stated aims of public policy.

Service context

The IMPACT^2 category of service context embeds the core elements generally used by OTs: the individual, the activity or task, and the environment into which the ATD is added. The pre-intervention context illustrates the public health strategies as environmental facilitators that influence the need for, and outcomes from AT provision (Seplaki et al., 2013). The adoption of Universal Design (UD) principles allows a diverse population to interact with environments and products without stigma or the requirement of adaptation (Hitch, Larkin, Watchorn, & Ang, 2012). Universally designed products and technologies (UT) are complementary to AT devices and, as a societal health promotion strategy, are considered a more efficient, and thus optimal, intervention compared to individually designed or adapted ATDs, but challenges in providing appropriate incentives or regulations prevent their widespread adoption (Elsaesser & Bauer, 2012; Hitch et al., 2012).

In Australia, public funding for AT generally does not extend to UT such as computers and phones that can be customised with applications or modifications to facilitate communication (Layton et al., 2010). The high use of and need for UT and AT that is ineligible for public subsidies puts pressure on consumers to independently source devices and services considered necessary for participation (Layton et al., 2010). The implications for occupational therapists include advocacy for collective accommodations, although

this is frequently outside the scope of individually-focussed service provision. At an individual level, making recommendations for 'those supports which will bring about an outcome', whether on an equipment funding list or not, is also an act of systemic advocacy for occupational therapists (Layton & Steel, 2015).

Baseline

Selection of ATDs requires the identification of baseline and future abilities and needs, and the ability to forecast changes resulting from development, ageing and experience, yet is often delayed or rushed in practice (Ripat & Booth, 2005). In rehabilitation, the provision of ATDs and environmental adaptations is often considered only after efforts to remediate impairments, rather than being integrated with early interventions (Dahlin Ivanoff et al., 2006). Elderly people have reported a preference to remain independent from ATDS, which can be stigmatising or require a period of adjustment, potentially delaying them from seeking AT advice or funding (Gramstad, Storli, & Hamran, 2013). AT should be provided for individuals when they can identify needs or difficulties, feel motivated to make changes, and have support available. Occupational therapists should understand the temporal nature of AT provision, and learn about each consumer's previous and current use of mainstream technologies and social supports as part of the process of selecting ATDs and other complementary supports.

Most AT provision models have been developed by service providers, who tend to prioritise different outcomes from consumers (Hammel et al., 2013; Ripat & Booth, 2005), potentially contributing to a biased focus on safety and independence, rather than changes in participation and quality of life. Consumers' perceptions of their role in AT provision vary depending on experience with ATDs, attitudes toward technology, and age. As members of ARATA, AT users expressed the need to access practitioners and resources throughout the processes of AT provision, and to gain knowledge and be actively involved in deciding on AT solutions (de Jonge et al., 2015). A set of quality criteria for AT provision has emerged from research into the motivations and incentives of a range of AT stakeholders in Australia (Table 2). The criteria illustrate the need for AT services to integrate ATDs with other supports and services in the context of environmental and personal factors as described in the ICF.

The interactions and relationships between the consumer, providers, and their community are as important as the quality of the AT devices in promoting best practice (Layton, 2014). Effective collaboration requires power sharing, but this is difficult when occupational therapists have competing objectives. Consumers are often in vulnerable positions with less power than other stakeholders, and may require guidance and representation when making AT choices. AT practitioners such as occupational therapists may face the challenge of balancing individual consumer choice and control against the distribution of collective resources. A failure to resolve this challenge in policy and practice could result in unsustainable consumption of public resources or meaningless policy rhetoric that perpetuates inequity. Occupational therapists must engage in political practices to champion transparent policies regarding funding and eligibility for ATDs by, for example, advocating for consumer engagement in the allocation of collective resources and evaluation of AT provision systems.

Intervention approaches

Successful integration of AT often involves the use of more than one device, intervention, or service. Redesign of an environment or activity, and the use of personal assistance, is usually required to support the use of ATDs and optimise an individual's functioning (Smith, 2005). For example, most people acquiring wheelchairs for the first time require home modifications, such as ramp installation or door-widening, to accommodate wheelchairs. The combination of devices and strategies, called an 'AT

solution' or an 'assistive solution' (Andrich, Mathiassen, Hoogerwerf, & Gelderblom, 2013) is tailored to the individual user's situation via processes of assessment, trial, and adaptation.

In Australia, most consumers combine all three components of assistive solutions to enable performance of daily activities, generally sourcing them from several services and sectors (Layton et al., 2010). The process of coordinating various services adds to the complexity of delineating the components of assistive solutions for outcomes measurement and economic evaluation. Whilst it may be pragmatically difficult for occupational therapists to prescribe beyond service boundaries, best practice suggests that recommendations take into account the technology chain which encapsulates AT (specialist and mainstream) as well as environmental adaptations, to tailor the best fit for the person and occupational context (Andrich et al., 2013). Device-specific funding can limit the cost-saving potential of assistive solutions (Ripat & Booth, 2005), whereas individualised assistive solutions, combined in an accessible environment, maximise the capacity of older people and people with disability for participation and autonomy (Andrich et al., 2013).

Person-centred approaches to AT provision have evolved along with society's understanding of disability, and require practitioners to evaluate and engage with individual consumers' preferences, and support their adoption of technologies into their lifestyles. This represents a significant shift away from traditional approaches linking a device to a diagnosis with the aim of correcting or reducing impairment (Lahm & Sizemore, 2002). Occupational therapy practice has progressed from a mechanistic approach to focus on functional abilities and environmental demands in addition to technical and ergonomic factors to enable goal achievement (Lahm & Sizemore, 2002). Occupational therapists must go further though, and recognise the unique situation of each individual, and the extent to which their values and emotions influence their use of and satisfaction with AT (Jutai et al., 2005; Ripat & Booth, 2005). Person-centred approaches that combine clinical and functional knowledge with therapeutic engagement to support decision-making and skill development are deemed necessary for successful use of ATDs (Waldron & Layton, 2008). Occupational therapists can use a range of person-centred assessment and outcome measures (e.g. the ICF Checklist) in practice and research to support individualised solutions (Elsaesser & Bauer, 2012; Rust & Smith, 2005).

Outcome co-variates

The IMPACT^2 separates the primary outcomes (performance, quality of life, and participation) from precursor variables of satisfaction with and use of AT, termed 'outcome covariates' (Smith, 2005). Consumer satisfaction is a desirable outcome from AT provision, but is not on its own indicative of person-centred practice or optimal ATD use, and creates ethical dilemmas for practitioners if tied to performance evaluation and financial incentives. Inconsistent correlation between satisfaction and health outcomes has encouraged AT researchers to measure it alongside a range of other medical, functional and societal outcomes (Elsaesser & Bauer, 2012). Even in countries where citizens have access to ATDs and services, research findings indicate general dissatisfaction with AT provision, and a mismatch between desired or espoused, and actual practices (National People with Disabilities and Carers Council, 2009; Ripat & Booth, 2005). Consumer access to, and expectations of AT devices and services influence their engagement and experiences, and should be incorporated into service evaluation to inform a better understanding of AT outcomes.

AT outcomes should be interpreted with an understanding of the components of assistive solutions, and of the context in which consumers acquire AT. Researchers have discussed the influence that factors related to policies and AT services have on consumers' experiences and outcomes, and called for a shift in

focus from outputs and outcomes to structures and processes (Lenker, Harris, Taugher, & Smith, 2013; Sund et al., 2013). Data are required to quantify the influence of factors such as practitioner qualifications, assessment and training procedures, opportunities for trial, and consideration of consumer goals (Lenker et al., 2013). This requires systematic documentation of the context and rationale for AT interventions, descriptions of the AT devices and services and concurrent interventions provided, and monitoring whether consumers receive the interventions as intended (Lenker et al., 2010).

Outcomes

Measurement of outcomes from AT provision is recognised as challenging in theory and in practice, due to the heterogeneous nature of consumers and ATDs, and the concurrent interventions that form assistive solutions (Jutai et al., 2005). ATDs and services are often not identified as discrete variables in rehabilitation outcomes measures, yet performance is rarely 'naked' or entirely without AT (Rust & Smith, 2005). In order to demonstrate the cost-effectiveness of AT provision, costs and outcomes must be quantified for inclusion in economic models, until better methods are available to guide policy decision-making. Focusing on the cost or outcomes from a single AT device or service is inconsistent with the lived experiences of AT users and professional values of occupational therapy, and limits the development of AT practice guidelines and policy (Hammel et al., 2013; Layton et al., 2010). The IMPACT^2 illustrates the concurrent interventions and context in which ATDs and services are embedded in practice, and provides a framework for costing the AT services, including training consumers and their caregivers, evaluating outcomes, and providing maintenance and follow-up services (Ripat & Booth, 2005; Smith, 2005).

Realisation of the potential for AT to improve inclusion and participation for individuals and society is dependent on the way in which it is conceptualised and delivered (Borg et al., 2011). The taxonomy of Assistive Technology Device Outcomes categorises short and long-term effects of AT devices under the broad concepts of effectiveness, social significance, and subjective wellbeing (Jutai et al., 2005). The effects are conceptually linked to the ICF to classify device-related, personal and environmental factors that modify functioning and other outcomes from AT use (Jutai et al., 2005). Outcomes from AT provision are more likely to be positive if combined with explicit efforts to support consumers' learning and effective use (World Health Organisation & World Bank, 2011). This supports the IMPACT^2 model of individualised AT provision, addressing the unique presentation of personal and environmental factors that influence outcomes for each consumer.

It is important for occupational therapists to include AT user perspectives in outcomes measurement, necessitating consideration as to whether the language and concepts used are familiar and relevant to users (Lenker et al., 2013). This is beneficial for researchers, practitioners and policy-makers, as consumers can describe experiences, identify variables, and interpret findings in ways that may not be intuitive, or even possible, for researchers who are not AT users. Service evaluations that incorporate subjective measures, such as consumers' feelings of being informed or engaged in decision-making, can be used alongside objective measures (Hammel et al., 2013). Outcomes should illustrate the impact of assistive solutions on participation across life domains and on human rights (Layton et al., 2010).

CONCLUSION

To date, AT provision in Australia fails to deliver equitable access to, and optimal outcomes for people who are ageing or living with disability (National People with Disabilities and Carers Council, 2009).

Although a frequent and at times costly intervention, there is insufficient rigorous research evidence to support the effectiveness of most ATDs and AT services provided (e.g., assessment, fitting, training) (Anttila, Samuelsson, Salminen, & Brandt, 2012; Jutai et al., 2005; Lovarini, McCluskey, & Curtin, 2006). Despite the acknowledged influence of AT on health and economic outcomes, the limited application of research into AT provision means that practice is not predominantly driven by theory and processes. As the range of ATDs expands, and the population of AT users grows, there is a greater need for robust approaches and reasoning to inform practice.

The heterogeneity of consumers and application of AT across sectors makes the prospect of designing an equitable and efficient AT provision system complex and challenging. This paper has used the ITEA methodology to highlight the value of diverse sources of knowledge in forming evidence statements that can be translated into actions including research methods, professional practice and policy advocacy. The ICF and IMPACT^2 model were used to illustrate the contextual factors, key variables and intervention approaches that shape outcomes from AT provision, and provide useful frameworks for occupational therapy practice and research. Technology is fundamental to enablement and inclusion, and provision of AT devices and services can be improved by collaboration with consumers at all levels, and persistent striving for and reflection on the congruence between theory, process and outcomes.

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FIGURE 1 The IMPACT^2 Model

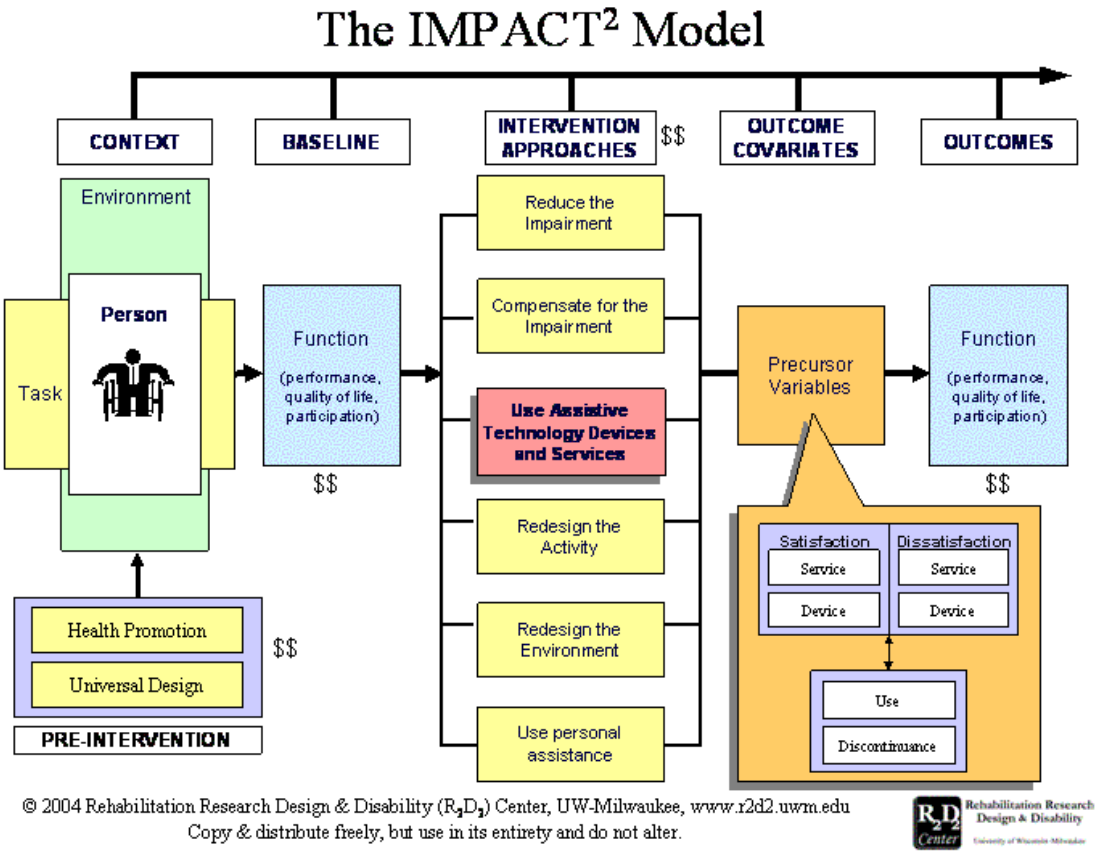

TABLE 1 Examples of public policy on the provision of AT in Australia the influence of institutional factors upon access to AT

Australian Government policy on AT provision by sector			
Sector, policy or program (with URL), and aims.	**Funding for AT devices and services**	**Desired outcomes (by ICF components and chapters)**	**Roles and implications for occupational therapy**
All sectors of all Australian governments National Disability Strategy (www.coag.gov.au/node/197) Adopts the principles set out in Article 3 of the CRPD and promotes "*a more cohesive approach across all governments*" (p8). Driven by human rights, social and economic imperatives; "*for the benefit of everyone, the barriers…need to be removed*"	2010 commitments to "*improving access to disability aids and equipment*" and "*improving the quality of disability services*" (p51) and plans to "*support the development of assistive technologies and more access to aids and equipment*" (p.52).	All chapters of Activities & Participation (d) and Environmental Factors (e)	Potential to work collaboratively with people with disability and their representative organisations in the development of programs, policies and systems (p67), and assist by reporting access and unmet demand (p69).

(p9).			
Health (community) Each state and territory government supports provision of ATDs and services, e.g. the State-wide Equipment Program (SWEP), Victoria http://swep.bhs.org.au/ "*To improve independence in your home, assist in community participation and support families and carers in their role*".	Provides 'subsidised aids, equipment and home and vehicle modifications' and 'support to the prescribers' through a number of programs. Each of the 9 programs within SWEP has different equipment options and different eligibility guidelines, capped subsidies and different follow-up arrangements.	Communication (d3), mobility (d4), self-care (d5), domestic life (d6), community, social and civic life (d9). Outputs (i.e. ATDs provided) rather than outcomes reported (e.g. participation).	Community OTs in general or specialist services authorise access to funding and provide limited services (e.g. often not funded to provide training and follow-up).
Social Services National Disability Insurance Scheme (NDIS) (at trial sites, 2015) www.ndis.gov.au/operational-guideline-planning-and-ass-11 "*Reasonable and necessary supports*" (p1) that offer "*value for money*" (p2), to "*facilitate the participant's social and economic participation*" (p5).	Provides ATDs and services (assessment, assistance with selection, fitting, configuring and training, delivery, and maintenance) as one of many funded supports in individualised plans. Approval of funding for "complex, specialised or high-risk assistive technology" requires "a written report detailing the requested assistive technology" (p7).	All chapters of Activities & Participation (d)	Private providers considered "*specialist assessors*" (p8) may be contracted by participants or their planners to assist with reports. Funding dependent on demonstrated need for AT services and evidence of social and economic outcomes.
Aged Care Commonwealth Home Support Programme (CHSP) www.dss.gov.au/our-responsibilities/ageing-and-aged-care/aged-care-reform/commonwealth-home-support-programme "*To provide access to goods, equipment or assistive technology which enables the client to perform tasks they would otherwise be unable to do or promote the older person's safety and independence*" (p43).	Funding for ATDS (self-care, support and mobility, medical care, communication, reading, car modifications, other goods and equipment) and time-limited allied health and therapy services. Funding capped at $500 (regardless of how many items are loaned or purchased), with provider	General tasks and demands (d2), communication (d3), mobility (d4), self-care (d5), domestic life (d6), community, social and civic life (d9).	"*Customised equipment and technology requires assessment and prescription by professionals with specialised skills and knowledge*" (p43). Pragmatic constraints of functional approach and funding cap. Must provide "*measurable,*

	discretion to increase the cap to $1,000 per client per financial year.		*objective, quantitative and qualitative indicators and record results associated with therapeutic goals*" (p42).
Employment Job Access www.jobaccess.gov.au/ The Employment Assistance Fund provides financial assistance to purchase a range of work related modifications and services that are "*essential to carrying out employment duties*" and represent "*value for money*" (p4).	Funds ATDs (including modifications to work vehicles and the physical work environment) and services (advice and workplace assessment) for people who have an offer of employment or are employed, for workplace use only. Ownership determines responsibility for maintenance and replacement, and portability of modifications.	Major life areas (d840-d859 work and employment)	OTs with "*relevant disability and industry experience*" are employed to submit reports to Job Access with outcomes of assessment and quotations. Must cost the ATDs and AT services and forecast workplace outcomes for employer and employee.

TABLE 2 Criteria for good AT service delivery from the users' perspective (de Jonge et al., 2009 cited in de Jonge et al., 2015)

Determination of the best combination of devices, personal care and environmental design.
Access to sufficient funding for good quality and long-lasting devices.
Funding to meet AT needs in every area of life.
Holistic assessment of needs, so that each device works well and does not interfere with other supports.
Consideration of AT needs across the lifespan and as needs change.
Support throughout the process of getting AT, including device trial, training and maintenance.
Access to resources when needed.
Active involvement in decision-making.
Consideration of personal preferences and identity so that AT is chosen to suit lifestyle and participation.